ROYAL CANADIAN ARMY CADETS

GREEN STAR

INSTRUCTIONAL GUIDE

SECTION 11

EO C121.02 – EXPLAIN THE EFFECTS OF COLD CLIMATE EXPOSURE

Total Time: 30 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-701/PG-001, *Green Star Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

An interactive lecture was chosen to introduce the cadets to the effects of cold weather climate.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson, the cadets shall be expected to prepare themselves to participate in a cold weather Field Training Exercise (FTX).

IMPORTANCE

Training in cold climates provides unique challenges to ensure cadets are safe and healthy. The risk of exposure is greatly increased when individuals are unaware of the various risk factors. For that reason, every cadet should be familiar with cold weather risk factors prior to participating in cold weather training.

Unofficial convenience copy of A-CR-CCP-701/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-701-PF-001/A-CR-CCP-701-PF-001.pdf.
Verify against the official publication.

Teaching point 1 **Identify types of cold.**

Time: 5 min Method: Interactive Lecture

TYPES OF COLD

- **Wet Cold.** Wet cold conditions occur when the temperature is close to the freezing point, with daytime temperature varying between freezing and thawing. Clothes need to be water resistant and wind repellent on the outer layer, and insulating and warm on the insulating layer. Waterproofing is essential.
- **Dry Cold.** Dry cold conditions occur when the temperature is below -10°C, when the ground is usually frozen and the snow is dry. This type of cold is identified by a crunching sound when walking in the snow. Wind and cold temperatures mean that protection of the whole body is needed. Clothing needs to provide adequate insulation for the body, bringing the dead air surrounding the body to 18.3°C. This insulation layer must be covered by an outer layer which is water and wind repellent.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

Q1. At what temperatures do wet cold conditions occur?

Q2. What are some of the dry cold conditions?

Q3. At what temperatures do dry cold conditions occur?

ANTICIPATED ANSWERS

A1. Wet cold conditions occur when the temperature is above -10°C.

A2. Dry cold conditions include frozen ground and dry snow.

A3. Dry cold conditions occur when the temperature is below -10°C.

Teaching point 2 **Explain windchill effect on the human body.**

Time: 10 min Method: Interactive Lecture

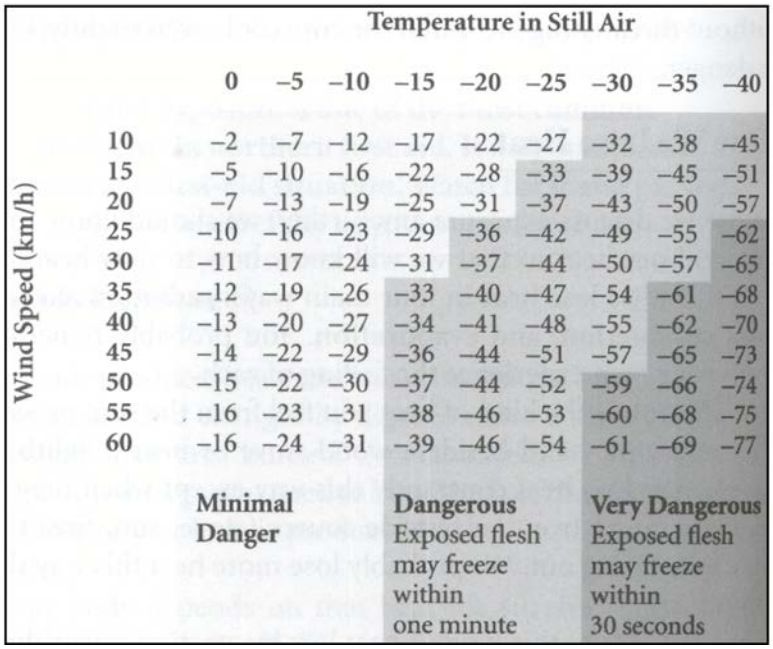
WIND CHILL AND ITS RELATED EFFECTS ON THE HUMAN BODY

Wind chill is defined as the number of calories lost during one hour from a square metre of a surface kept at neutral skin temperature (33°C). Wind chill is a measure of the combined effects of wind and temperature (See Figure 1).

Human comfort depends on the maintenance of a constant body temperature. When high winds are blowing, it feels much colder than when it is calm.

The lesson to remember is that thermometer readings alone will not give you a valid indication of the effects to be expected on the body. The wind chill scale is not strictly applicable as a measure of human comfort, as it does not take into account important factors such as activity, humidity, loss of heat in breath, radiation from the sun and the effects of lowered skin temperature.

Unofficial convenience copy of A-CR-CCP-701/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-701-PF-001/A-CR-CCP-701-PF-001.pdf.
Verify against the official publication.



Wind Speed (km/h)	Temperature in Still Air								
	0	−5	−10	−15	−20	−25	−30	−35	−40
10	−2	−7	−12	−17	−22	−27	−32	−38	−45
15	−5	−10	−16	−22	−28	−33	−39	−45	−51
20	−7	−13	−19	−25	−31	−37	−43	−50	−57
25	−10	−16	−23	−29	−36	−42	−49	−55	−62
30	−11	−17	−24	−31	−37	−44	−50	−57	−65
35	−12	−19	−26	−33	−40	−47	−54	−61	−68
40	−13	−20	−27	−34	−41	−48	−55	−62	−70
45	−14	−22	−29	−36	−44	−51	−57	−65	−73
50	−15	−22	−30	−37	−44	−52	−59	−66	−74
55	−16	−23	−31	−38	−46	−53	−60	−68	−75
60	−16	−24	−31	−39	−46	−54	−61	−69	−77

Minimal Danger

Dangerous Exposed flesh may freeze within one minute

Very Dangerous Exposed flesh may freeze within 30 seconds

St. John Ambulance Official Wilderness First-Aid Guide, Wayne Merry, 1994

Figure 1 Wind Chill Chart

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

Q1. Wind chill is defined as the number of what lost, during one hour, from a square metre of a surface kept at neutral skin temperature?

Q2. True or false? When high wind is blowing, the temperature can feel colder than it is.

Q3. What are other factors that need to be taken into account with the wind chill?

ANTICIPATED ANSWERS

A1. Number of calories.

A2. True.

A3. Factors include activity, humidity, loss of heat from breath no comma and radiation from the sun.

Teaching point 3 **Discuss the rules of cold weather training.**

Time: 10 min Method: Interactive Lecture

BASIC RULES OF COLD WEATHER TRAINING THAT ALLOW THE BODY TO ADJUST TO COLD CONDITIONS

The human body must be protected. To remain functional, it must be kept clean, dry and reasonably warm with normal body processes maintained. Rest and nutrition are vital.

Unofficial convenience copy of A-CR-CCP-701/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-701-PF-001/A-CR-CCP-701-PF-001.pdf.
Verify against the official publication.

Here are four basic rules to remember:

- **Keep in Shape.** Cold weather clothing is very heavy and can make you very tired when moving around in it. If you stay in shape, you will not become exhausted so quickly. A sleeping cadet will not freeze unless exhausted. You will awaken long before the danger point approaches.
- **Proper Hydration.** In winter, people generally do not drink enough water, as it is harder to come by. Dehydration leads to fatigue, so it is important to drink water even though you may not feel thirsty. This rules goes hand-in-hand with keeping active. As you do more activities to stay in shape, you have to replenish fluids lost through sweating. It is also important to mention that the wearing of heavy clothes leads to sweating which is not always noticeable to you. This sweating will lead to dehydration if not properly addressed.
- **Eating to Keep Fit.** Regular, hot food is essential to feeling your best and for top performance. Make sure you are eating, even if you do not feel hungry. It is important to eat three meals a day of as much hot food as you can. Healthy snacks, such as trail mix, between meals and before going to sleep will help generate body heat as the food is metabolized.
- **Maintain a Healthy Attitude.** Having a healthy attitude will help you survive longer in the cold. Keep alert and cheerful, and work hard. This combination will give you the right attitude. Training in cold weather can be difficult and uncomfortable, which can affect morale and mood. Having some patience, an open mind and some determination can allow you to enjoy many of the activities that the cold weather brings.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

Q1. What are two of the basic rules for cold weather training that help the body adjust to the cold?

Q2. Does severe exhaustion increase or decrease the chance of fatality in the cold?

Q3. Should you drink water if you do not feel thirsty?

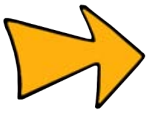
ANTICIPATED ANSWERS

A1. Any two of the following:

- keep in shape;
- proper hydration;
- eat to keep fit; and
- maintain a healthy attitude.

A2. Increases.

A3. Yes, you should drink water, even if you do not feel thirsty.



Remember – Cold weather will make tasks harder and they may take longer, but it does not make them impossible. With the right equipment and training, you can beat the cold.

END OF LESSON CONFIRMATION

Confirmation is best achieved by going outside and reviewing the conditions; however, if the weather is not appropriate, the end of lesson confirmation could be any of the following questions:

Unofficial convenience copy of A-CR-CCP-701/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-701-PF-001/A-CR-CCP-701-PF-001.pdf.
Verify against the official publication.

QUESTIONS

Q1. At what temperature do wet cold conditions occur?

Q2. What are some of the characteristics of dry cold conditions?

Q3. Wind chill is defined as the number of what lost during one hour from a square metre of a surface kept at neutral skin temperature?

Q4. True or false? When high wind is blowing, it can feel colder than it is.

Q5. Should you drink water if you do not feel thirsty?

ANTICIPATED ANSWERS

A1. Wet cold conditions occur when the temperature is above 14°F.

A2. Cold conditions include frozen ground and dry snow.

A3. Number of calories.

A4. True.

A5. Yes.



The instructor may choose to write down each of the questions on a piece of paper and place them into a bag. The cadets can then be divided into pairs (if the group is large), and each individual (or group) then picks a piece of paper out of the bag. The cadet should read the question and provide the answer to the rest of the group.

CONCLUSION

HOMEWORK/READING/PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

Remember: You can coexist with the cold ***if*** you are prepared and take care of yourself by following the basic rules of training in cold weather.

INSTRUCTOR NOTES/REMARKS

This period may be conducted as a stand alone lesson or as pre-training to EO C121.05 (Participate in Cold Weather Training).

This lesson is best delivered under the supervision of a cold weather instructor.

REFERENCES

A2-009 A-CR-CCP-107/PT 002 DCdts. (1978). *Royal Canadian Army Cadets Course Training Plan Corps Training Program Winter Adventure Training Manual.* Ottawa, ON: National Defence.

Unofficial convenience copy of A-CR-CCP-701/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-701-PF-001/A-CR-CCP-701-PF-001.pdf.
Verify against the official publication.

C2-029 The Green Lane. (2002, 2005). *Windchill.* Retrieved 25 May 2006, from http://www.msc.ec.gc.ca/windchill.

Unofficial convenience copy of A-CR-CCP-701/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-701-PF-001/A-CR-CCP-701-PF-001.pdf.
Verify against the official publication.